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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,005	11/22/2004	Masayuki Takenaka	Q81942	3345
23373 7590 10/16/2008 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
EXAMINER TAMAL, KARL I				
ART UNIT 2834		PAPER NUMBER		
MAIL DATE 10/16/2008		DELIVERY MODE PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/501,005

Applicant(s)

TAKENAKA ET AL.

Examiner

KARL I.E. TAMAI

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4, 5 and 7-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4 and 13 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5, 7-12 and 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The replacement Figure 16 is approved. The objection to the drawing is withdrawn.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 11 is vague and indefinite because it depends from cancelled claim 6. For the purpose of advancing prosecution on the merits, the examiner will assume that the claim depends from claim 2.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6323613) in view of Regnier et al. (US 6236566, supplied by applicant). Hara teaches a drive unit including: an electric motor (Fig. 9, M), a drive unit casing (Fig. 9, #13) accommodating therein the electric motor, and inverter (Fig. 9, U) that controls the electric motor, and a flow passage (as seen in Fig. 6) of a refrigerant that cools the inverter, the drive unit characterized in that the inverter is mounted on the drive unit casing such that a heat sink (Fig. 6, #11) united with a substrate (as seen in Fig. 9) of the inverter defines a space on a portion thereof opposed to the drive unit casing (as seen in Fig. 9), the space is communicated to the flow passage of the refrigerant (as seen in Fig. 6), the heat sink comprises heat-sink side fins extending into the space toward the drive unit casing, separation means (Fig. 9, #12) for preventing thermal conduction is provided in the space. Hara teaches the separation 12 being a thermally insulating material (col. 8, line 33), but it does not explicitly teach both the heat sink fins and the drive unit casing directly contacting the separation means (Fig. 9, appears to teach such an arrangement, but not clearly).

However, Regnier teaches heat sink fins (Fig. 5, #44) directly contacting a separation means (Fig. 5, #46). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fins and separation means of Hara in view of the direct contact as taught by Regnier because optimizes the exchange of heat via the fins by preventing an unwanted flow of water around them (Regnier, Col. 4, Lines 5-11).

With respect to claim 1, Regnier teaches the optimized heat passage V on either formed by cooling fins which taper to a point. It would have been obvious to taper to cooling fins of the heat sink in contact with the drive unit to increase the surface areas in in which heat is dissipated to the coolant.

7. Claims 2, 5, 7, and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6323613) in view of Regnier et al. (US 6236566, supplied by applicant) and Nishizawa et al. (Nishizawa)(JP 11-155257).

With respect to claim 2, Hara teaches a drive unit including: an electric motor (Fig. 9, M), a drive unit casing (Fig. 9, #13) accommodating therein the electric motor, and inverter (Fig. 9, U) that controls the electric motor, and a flow passage (as seen in Fig. 6) of a refrigerant that cools the inverter, the drive unit characterized in that the inverter is mounted on the drive unit casing such that a heat sink (Fig. 6, #11) united with a substrate (as seen in Fig. 9) of the inverter defines a space on a portion thereof opposed to the drive unit casing (as seen in Fig. 9), the space is communicated to the flow passage of the refrigerant (as seen in Fig. 6), the heat sink comprises heat-sink

side fins extending into the space toward the drive unit casing, separation means (Fig. 9, #12) for preventing thermal conduction is provided in the space. Hara teaches the separation 12 being a thermally insulating material (col. 8, line 33), but it does not explicitly teach both the heat sink fins and the drive unit casing directly contacting the one plate separation means (Fig. 9, appears to teach such an arrangement, but not clearly). Hara teaches the drive unit casing including fins 13a extending into the space between the casing 10 and the inverter U/heat sink 11 (see figure 7 and 10). Hara does not teach the one plate, separation means positioned between mating surfaces of the inverter casing and the drive unit casing. Nishizawa teaches a heat insulating material on the one plate separation means 2c between the mating surfaces of the inverter casing and the motor housing to reduce the effect of the inverter heat on the motor.

However, Regnier teaches heat sink fins (Fig. 5, #44) directly contacting a one plate separation means (Fig. 5, #46). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fins and separation means of Hara in view of the direct contact as taught by Regnier because optimizes the exchange of heat via the fins by preventing an unwanted flow of water around them (Regnier, Col. 4, Lines 5-11), and with the heat insulating material between the mating surfaces of the inverter casing and the motor housing to reduce the effect of the inverter heat on the motor, as taught by Nishikawa.

With respect to claim 5, Hara in view of Regnier teaches the drive unit of claim 2, wherein the separation means comprises a laminated (layered) member. The limitation of the separation means being formed by laminating a low thermal conductive member

on a separation member is a method limitation given little patentable weight in an apparatus claim.

With respect to claim 7, Hara suggests the separate plate between forming two chambers (see figure 7, above and below plate 12). Hara in view of Regnier teaches the drive unit of claim 2, and Hara teaches that the space is compartmented by the separation means into a first chamber facing toward the heat sink, and a second chamber facing toward the drive unit casing (as seen in Fig. 5).

With respect to claim 9, Hara teaches a separate inverter casing/cover (see figure 9).

With respect to claim 10, Hara teaches the cooling fins (on 11) and 13a forming common flow path (figure 12).

With respect to claim 11, Hara in view of Regnier teaches the drive unit of claim 3, and Hara teaches that the low thermal conductive means is shaped to follow contact portions of the heat-sink side fins and drive-unit-casing side fins (as seen in Fig. 9).

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6201365) and Regnier et al. (US 6236566, supplied by applicant) and Nishizawa et al. (Nishizawa)(JP 11-155257), in further view of Suzuki (US 2001/0014029). Hara, Regnier, and Nishikawa teach every aspect of the invention except the separate housing for the inverter. Suzuki teaches that the inverter is received in an inverter casing composed of a member separate from the inverter with a substrate thereof fixed to a bottom wall of the inverter casing and constituting a heat

sink, of which a substrate is united with the bottom wall of the inverter casing (as seen in Fig. 2). It would have been obvious to a person of ordinary skill in the art to construct a separate housing for the inverter, as shown in Suzuki, to provide easy replacement to the inverter.

9. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6201365) and Regnier et al. (US 6236566, supplied by applicant) and Nishizawa et al. (Nishizawa)(JP 11-155257), in further view of Baeumel et al. (Baeumel)(US 6198183). Hara, Regnier, and Nishikawa teach every aspect of the invention except the separation means on the mating surface of the inverter casing and the drive unit casing and the side fins and periphery wall of the inverter casing being formed as a unit. Baeumel teaches the cooling fins 42 of the motor control unit and the drive unit motor casing 23 in direct contact with the separation means 7. It would have been obvious to a person of ordinary skill in the art to construct the motor of Hara, Regnier, and Nishizawa with a separation means to provide thermal decoupling of the motor control module and the motor, as taught by Baeumel, and with the drive unit casing and the side fins and periphery wall of the inverter casing being formed as a unit to provide reduced manufacturing costs and because it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. (See *Nerwin v. Erlichman*, 168 USPQ 177, 179).

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (Hara)(US 6323613) in view of Baeumel et al. (Baeumel)(US 6198183). Hara teaches a drive unit including: an electric motor (Fig. 9, M), a drive unit casing (Fig. 9, #13) accommodating therein the electric motor, and inverter (Fig. 9, U) that controls the electric motor, and a flow passage (as seen in Fig. 6) of a refrigerant that cools the inverter, the drive unit characterized in that the inverter is mounted on the drive unit casing such that a heat sink (Fig. 6, #11) united with a substrate (as seen in Fig. 9) of the inverter defines a space on a portion thereof opposed to the drive unit casing (as seen in Fig. 9), the space is communicated to the flow passage of the refrigerant (as seen in Fig. 6), the heat sink comprises heat-sink side fins extending into the space toward the drive unit casing, separation means (Fig. 9, #12) for preventing thermal conduction is provided in the space. Hara teaches every aspect of the invention except the heat sink fins and the drive unit casing in contact with a separation means. Baeumel teaches the cooling fins 42 of the motor control unit and the drive unit motor casing 23 in direct contact with the separation means 7. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the motor of Hara with the heat sink fins and the drive unit casing in contact with a separation means to provide thermal decoupling of the motor control module and the motor, as taught by Baeumel.

Allowable Subject Matter

11. Claims 4 and 13 are allowed.

Response to Arguments

12. Applicant's arguments filed 7/30/2008 have been fully considered but they are not persuasive and/or moot in view of the new ground of rejection. Applicant's arguments that Regnier does not provide the same motivation of resisting heat dissipation is not persuasive. The fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Regnier teaches cooling fins with a line contact to optimize the heat exchange to the cooling fluid (col. 4, lines 5-12) because the cooling fluid is constrained to flow between the cooling fins. The Applicant's argument regarding the reduced heat flow to the casing is another advantage that would also occur from the literal motivation provide by Regnier of optimizing the each exchange to the cooling fluid from the fins. Applicant's argument regarding the direct contact with the drive unit casing is not persuasive because Regnier teaches direction contact with the casing 46 in order to maintain the fluid flow along the cooling fins and not around the cooling fins to optimized the heat transfer. Applicant's argument that the cooling fins do not directly connect the separation means 46 is not persuasive because it is clearly shown in figure 5. The Applicant's argument that Regnier does not teach the casing being a drive unit casing is not persuasive because Hara shows the cooling fins contacting the drive unit casing (see figure 9). Applicant's argument that Regnier figure 6 shows not contact between the cooling fins is not persuasive because that is an alternate embodiment. Regnier does teach the

optimization by the cooling fins with tapered shapes (fins 44 and 144) in both embodiments. The tapered shaped is clearly providing more surface area for the dissipation of heat to the cooling fluid in both embodiments, providing more motivation to combine the references. The rejection is proper and maintained.

Applicant's argument regarding claim 7 is not persuasive because Hara suggests the separate plate between forming two chambers (see figure 7, above and below plate 12). Hara in view of Regnier teaches the drive unit of claim 2, and Hara teaches that the space is compartmented by the separation means into a first chamber facing toward the heat sink, and a second chamber facing toward the drive unit casing (as seen in Fig. 5).

Applicant's argument regarding the contact between the insulation layer 7 and the motor casing 23 is not persuasive because Baeumel teaches that the protrusions are in flush contact with the casing 23 (See col. 7, line 29-30). Such that the insulation which is adhesively mounted on the protrusions would be flushly mounted on the casing 23. The rejection is proper and maintained.

Conclusion

13. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036.

The examiner can be normally contacted on Monday through Friday from 8:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mrs. Quyen Leung, can be reached at (571) 272 - 8188. The facsimile number for the Group is (571) 273 - 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karl I Tamai/
PRIMARY PATENT EXAMINER
October 16, 2008